

## CLAIMS

**What is claimed is:**

1. An optical data storage system comprising:  
a plurality of optical media platters; and  
a cartridge housing the plurality of optical media platters wherein the plurality of optical media platters are pre-loaded in the cartridge and wherein the cartridge is adapted to substantially preclude user access to the plurality of optical media platters.
2. The system of claim 1 wherein each platter of the plurality of optical media platters is a rewritable media.
3. The system of claim 1 wherein each platter of the plurality of optical media platters is a write-once media.
4. The system of claim 1 wherein the cartridge further comprises:  
a plurality of sliding trays each adapted to receive a corresponding platter of the plurality of optical media platters and further adapted to permit slidable extraction of the corresponding platter from the cartridge.
5. The system of claim 1 wherein the cartridge further comprises:  
a plurality of separators adapted as a bearing surface between individual platters of the plurality of optical media platters; and  
a plurality of extractors each adapted to pull a corresponding individual platter of the plurality of optical media platters from the cartridge.
6. The system of claim 1 wherein the cartridge housing comprises an optically opaque material.
7. The system of claim 6 wherein the opaque housing is opaque to ultraviolet wavelengths.

8. The system of claim 1 further comprising:  
a robotic assembly adapted to extract from the cartridge a subset of platters of the plurality of optical media platters and to return the extracted subset to the cartridge; and  
a drive mechanism adapted for writing data on the subset and adapted for reading data from the subset.

9. The system of claim 8 wherein the system is operable to write redundancy information on the subset and is further operable to read the redundancy information in read operations to enhance reliability of the system.

10. The system of claim 8

wherein the drive mechanism further comprises:

an optical read/write assembly; and

a platter rotation assembly system, and

wherein the robotic assembly further comprises:

a positioning assembly to vertically align the optical read/write assembly and platter rotation assembly with the subset.

11. The system of claim 8 further comprising:

a cartridge opening mechanism to open the cartridge in response to insertion of the cartridge into the drive mechanism and to close the cartridge in association with extraction of the cartridge from the drive mechanism.

12. The system of claim 8 wherein the robotic assembly is adapted to fully extract the subset from the cartridge.

13. The system of claim 8 wherein the robotic assembly is adapted to partially extract the subset from the cartridge to an extent sufficient to engage the drive mechanism.

14. The system of claim 8 wherein the drive mechanism further comprises:

a storage controller including a host system interface and adapted to present the plurality of optical media platters as a contiguous storage volume to an attached host system.

15. The system of claim 14 wherein the controller is further adapted to present a streaming tape command set to an attached host computer.

16. The system of claim 15 wherein the controller is further adapted to record a volume header record at the beginning of the storage volume

17. The system of claim 15 wherein the storage volume comprises a plurality of logical blocks and wherein the controller is further adapted to record a block header at the beginning of each logical block.

18. The system of claim 15 wherein the storage volume comprises a plurality of logical blocks and wherein the controller is further adapted to record a block header at the beginning of each group of logical blocks of user data.

19. The system of claim 14 wherein the controller is further adapted to present a multi-media command set to an attached host computer.

20. The system of claim 14 wherein the controller is further adapted to provide data compression for data stored on the plurality of optical media platters and is further adapted to provide data decompression for data retrieved from the plurality media platters.

21. The system of claim 14 wherein the subset comprises multiple platters of the plurality of optical media platters and wherein the controller is further adapted to distribute data over the subset.

22. The system of claim 14 wherein the read/write assembly comprises a plurality of read/write heads and wherein the controller is further adapted to stripe data over the subset using the plurality of read/write heads substantially in parallel.

23. The system of claim 14 wherein the controller is further adapted to record a header record on each platter of the plurality of optical media platters wherein the header identifies a cartridge relative index of the corresponding platter indicative of the corresponding platter's position within the cartridge.

24. The system of claim 23 wherein the header further identifies a subset membership index of the corresponding platter indicative of which subset of a plurality of subsets of the cartridge in which the corresponding platter is a member.

25. The system of claim 24 wherein the header further identifies a subset relative index of the corresponding platter indicative of the corresponding platter's position within the subset.